Analysis of Research Methodology on Institutional-Based Competitiveness of Agricultural Commodities

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Abstract. This study aims to see the novelty of the research methods used by previous studies to study the competitiveness of institutional-based agricultural commodities. For this reason, it is necessary to review the research methods used in previous studies (2015 - 2020). To facilitate researchers in compiling previous research mapping on the study of the competitiveness of institutional-based agricultural commodities, the Systematic Literature Review (SLR) method is used. Used in institutional-based agricultural commodity competitiveness research is quantitative research (6 articles) and qualitative type (5 articles) with descriptive nature and SWOT analysis approach, conjoint pairwise-comparison, interactive model of analysis, scaling index, panzer-rosse index. While the type of research is the mixed method with a data envelopment analysis (DEA) approach, the assumption of variable return to scale (VRS) is only used in 1 article. Weaknesses that exist in this quantitative and qualitative research are descriptive with the SWOT Analysis method, Conjoint Pairwise-Comparison, interactive model of analysis, scaling index, and Panzar-Rosse index. External estimates are only estimated so that it is possible to produce an inaccurate strategy. The number of attributes used in the Conjoint Pairwise-Comparison analysis could be much higher. The choice-based conjoint analysis cannot provide individual-level utility, and researchers develop an aggregate model to represent market preferences.

Keywords: Competitiveness, Institutional, Systematic Literature Review, Agricultural Commodities.

1   Introduction

The scientific concept of the competitiveness of institutional studies is one of the studies carried out by previous researchers. Competitiveness is an important aspect of trading a product as a strategy to enter exports because competition reflects the ability to win market share. The concept of competitiveness commonly understood is a commodity's ability to compete, which reflects its ability to win market share (Nolasary, 2019).

Institutions and strategies to increase competitiveness depend on land expansion and cropping pattern regulation to ensure continuity of production quantities, optimize the role of agribusiness sub-terminals as marketing institutions, and maximize the role of government in facilitating farmer groups with associations or companies.

The results of research conducted by (Eka Rahayu Kartika, 2015) explain that there are several problems with the competitiveness of agricultural commodities in farmer institutions, namely: Partnerships with companies do not work, many traders do not pay according to the agreement, traders find it difficult to choose farmers whose products meet export standards, access to market information is still limited, access to marketing facilities for potato products is limited, the number of competent farmers is still very small, the number of certified potato seeds available does not meet the needs, the use of pesticides in quantities exceeds the limit, and the difficulty of directing farmers to cultivate with Good Agriculture Practice (GAP).

To see updates or novelties from research on the competitiveness of institutional-based agricultural commodities, it is necessary to review the research methods that have been used in previous studies (2015 - 2020) so that further research will produce scientific concepts that have a positive and significant impact in maintaining and improving the competitiveness of agricultural commodities. Based on local, national, and international institutions.

The following are the research questions in this study:

1. RQ1. What research methods are often used in research on the competitiveness of institutional-based agricultural commodities from 2015 to 2020?
2. RQ2. What are the weaknesses of the research methods used in institutional-based research on the competitiveness of agricultural commodities?

2   Literature Review

"Research methodology" comes from the word "Method," which means the right way to do something, and "Logos," which means knowledge or knowledge. So, methodology means doing something by using the mind carefully to achieve a goal. While "Research" is an activity to search, record, formulate, and analyze to compile the report. Based on the opinions expressed by David H. Penny, J. Suprapto MA, Sutrisno Hadi MA, and Mohammad Ali, it can be concluded that research methodology is a branch of science that discusses how to carry out research until compiling reports) based on facts. Scientific facts or phenomena.

(Kattsoff, 1987) explains that ontology is two parts of metaphysics, meaning that ontology discusses what exists from the point of view of its essence, discusses the relationship between various parts of reality and the way that reality changes, which concerns the order and order of reality, and discusses rational principles that already exist. According to (1989), Ontology is the principle in applying the scope of being, which is the object of the study and interpretation of the nature of reality from the object of the ontology. Ontology is also the basis of science, which asks what is related to knowledge and relates to the realm of reality and existence.

(Eisend & Kuss, 2019) Explains that "Epistemology is a part of philosophy and deals with knowledge's origin, limits, and core essence. Schurz formulated the ultimate epistemic goal and five epistemological assumptions relevant to factual science. Restrictions on factual sciences such as physics, chemistry, psychology, and marketing are important because in more formalistic sciences such as mathematics and logic, references to certain realities and demands for empirical verification have little relevance.

Axiology is part of the philosophy of science that questions how humans use their knowledge. Axiology: the value of the usefulness of science, the investigation of the principles of value. Etymologically, the term axiology comes from Ancient Greek, consisting of the word "aksios," which means value, and "logos," which means theory. So, axiology is a branch of philosophy that studies values (Sadulloh, 2007). According to (2006), Talking axiology can be found in life, such as fair and unfair, honest and dishonest. One that gets attention is the issue of ethics/decency; in ethics, the material object is conscious human behavior. The formal object is understanding good or bad, moral or immoral, from an act or human behavior.

To facilitate researchers in compiling previous research mapping on the study of the competitiveness of institutional-based agricultural commodities, the Systematic Literature Review (SLR) method is used. The SLR method identifies, reviews, evaluates, and interprets all available research with topic areas of interest to phenomena, with specific relevant research questions. With the use of the SLR method, a systematic review and journal identification can be done, which in each process follows the steps or protocols set (Triandini et al., 2019).

The competitiveness of agricultural commodities based on agricultural commodity institutions is evaluated by counting the number of authors, research outputs, and citations and comparing the papers written between 2015 and 2020. The authors also consulted the total citations and publications of researchers at Google Scholar, Garba. Digital Reference (Garuda), Science Direct, or other websites to ensure that the full list of publications has been retrieved. It is usually the case that data from Google searches for publications and authors has more citations and is more up-to-date.

2.1   Research Process

The search process obtains relevant sources to answer the Research Question (RQ) and other related references. The search process uses a search engine (Google Chrome) with the site addresses of Google Scholar, Garba Reference Digital (Garuda), Science Direct, and google.com for primary and secondary data.

2.2   Inclusion and Exclusion Criteria

Tahapan ini dilakukan untuk memutuskan apakah data yang ditemukan layak digunakan dalam penelitian SLR atau tidak. Studi layak dipilih jika terdapat kriteria sebagai berikut:
1. Data yang digunakan dalam rentang waktu 2015-2020
2. Data diperoleh melalui situs Google Cendekia, Garba Rujukan Digital (Garuda), *Scinence direct* dan google.com.

3. Data yang digunakan hanya berhubungan dengan metode penelitian yang digunakan pada penelitian daya saing berbasis kelembagaan.

2.3   Quality Assessment

This stage is carried out to decide whether the data found are suitable for SLR research. A study is eligible to be selected if the following criteria are met:
1. Data used in the 2015-2020 period
2. The data was obtained through the Google Scholar website, Garba Reference Digital (Garuda), Science Direct, and google.com.
3. The data used only relates to the research methods used in institutional-based competitiveness research.

2.4   Data Analysis

At this stage, the data that has been collected will be analyzed to show:
1) Research methods were often used on the competitiveness of institutional-based agricultural commodities from 2015 to 2020 (referring to RQ1).
2) Weaknesses of the research method on the competitiveness of institutional-based agricultural commodities (referring to RQ2).

3   Results and Discussion

3.1   RQ1. What research methods are often used in research on the competitiveness of institutional-based agricultural commodities from 2015 to 2020?

From the Quality Assessment 1 (QA1) results, are the journal papers published in 2015–2020? The results of Quality Assessment 2 (QA2) are the journal papers discussing the research methods used on the competitiveness of institutional-based agricultural commodities. There are 15 relevant articles grouped by development platform and approach used to answer research question 1 (RQ1).

This result answers RQ1, which shows that from 102 journals and 143 articles selected by Quality Assessment, 12 articles related to research methods were often used in institutional-based agricultural commodity competitiveness research from 2015 to 2020.

The research methods that are often or most widely used in research on the competitiveness of agricultural commodities based on institutions are quantitative research types (6 articles) and qualitative types (5 articles) with descriptive nature and SWOT analysis approach, Conjoint Pairwise-Comparison, interactive model of analysis, scaling Index, Panzar-Rosse index. While this type of research is a Mixed Method with a Data Envelopment Analysis (DEA) approach, assuming Variable Return To Scale (VRS) is only used in 1 article.
1)   Types of Qualitative Research are Descriptive

Based on previous research studies using the SLR method, it was found that the descriptive qualitative research method that had been used in research on the competitiveness of institutional-based agricultural commodities that already existed in the 2015 - 2020 range was five articles.

The following are several approaches and analytical methods used in this type of descriptive qualitative research on institutional-based competitiveness research:

a. SWOT analysis

SWOT analysis was invented by Professor Albert Humphrey at Stanford University (Thompson, 2005). According to (Prentice Hall, 2009), SWOT analysis provides useful information for adjusting resources and capabilities for the competitive environment in which the organization operates. The model can be used as a tool for designing and selecting strategies and is equally applicable in any decision-making situation as long as the desired goals are clearly defined.

b. Key Performance Indicators (KPI)

The main performance indicators for increasing competitiveness are made to meet the SMART criteria (Specific, Measurable, Achievable, Result-oriented, Time-specific). Performance indicators are used to ensure that the day-to-day performance of the relevant work unit organization shows progress towards the goals and objectives set in strategic planning (Fisheries, 2016).

c. The house model

The concept was built to describe the organization's efforts to turn dreams into action. (Horovitz J, 2007) designed this model into three components, namely the roof as a vision, where the vision in this research is to increase the competitiveness of chili commodities in Garut Regency, pillars as the main key to achieving this vision, and the foundation in the form of supporting behavior.

d. Pairwise-Comparison Conjoint Analysis

Hair et al. (2010) (Prasaja, 2014) explain that Conjoint Pairwise-Comparison analysis is a multivariate technique that was developed specifically to understand respondents' preferences for a type of object (products, services, or ideas). This analysis is used to help get the combination or composition of the attributes of a product or service, both new and old, that consumers like the most.

e. Interactive Model of Analysis

The data analysis model used in this study is an interactive model of analysis, which consists of three main components in interactive analysis, namely: data reduction, data presentation, and conclusion. Furthermore, data validation uses data source triangulation techniques (Miles et al., 1992).

2) Types of Qualitative Research are Descriptive

Based on previous research studies using the SLR method, it was found that the descriptive quantitative research method that had been used in research on the competitiveness of institutional-based agricultural commodities that already existed in the 2015 - 2020 range was six articles.

The following are some analytical approaches and methods used in descriptive quantitative research in institutional-based competitiveness research:

a. Multidimensional Scaling Index Approach

Kruskal (1977) and Borg and Groenen (2005) state that MDS is a statistical analysis to determine the similarity and dissimilarity of variables described in geometric space. According to Lee (2011), the weakness is that it is only based on cognitive modeling. (Atyanto, 2015) There are several steps taken in the use of MDS, namely the determination of dimensions and attributes through expert discussion, assessment, and ordinal scoring in the range of 0 (poor) to 3 (good) according to the attribute character by selected respondents or based on data - data obtained (both primary and secondary). The next step is to perform the MDS ordinance on the dimensions of the leverage factor analysis of the attributes based on the Root Mean Square (RMS) on the x-axis. The final stage is to conduct a Monte Carlo analysis to determine the effect of errors in scoring.

b. Panzar-Rosse. Index

This method is based on the reduced form of the revenue equation, using the company's revenue and price data. This method assesses the competitive behavior of banks to determine market structure. The PanzarRose method calculates the sum of the income elasticity of input prices. This number is given the symbol H (Vesalla, 1995). This elasticity value contains information about bank behavior that will determine the market structure (Mulyaningsih & Daly, 2011).

c. Data Envelopment Analysis (DEA)

The quantitative approach using DEA measures the decision-making unit's (DMU) efficiency by using linear programming techniques to accommodate the input-output vector as strongly as possible (Boussofiane et al. in Ji and Lee, 2010. The assumption that will be used in this study is the VRS assumption to determine DMU efficiency (Yasin & Yanuarisma, 2016) Data Envelopment Analysis (DEA) is a mathematical program optimization method used to measure the technical efficiency of an Economic Activity Unit (UKE) and compare it relative to other UKE (Charnes et al. 1978; Banker et al.198 in Etty Puji Lestari 2001) in (Ikasari, 2009). There are 3 (three) benefits of measuring efficiency using the DEA method, namely, first, as a benchmark to obtain relative efficiency that is useful for facilitating comparisons between economic units. The second is to measure various efficiency information between UKEs as a material to identify p . factors the cause, and the third is to determine the policy implications of increasing efficiency.

3) Types of Mixed Method Research

Based on previous research studies using the SLR method, it was found that the Mixed Method research method used in research on the competitiveness of institutional-based agricultural commodities that already existed in the 2015 - 2020 range was 1 article.

The following are the approaches and analytical methods used in this mixed-method research on institutional-based competitiveness research.

a. Data Envelopment Analysis (DEA)

The quantitative approach using DEA measures the decision-making unit's (DMU) efficiency using linear programming techniques to accommodate the input-output vector as strongly as possible (Boussofiane et al. in Ji and Lee, 2010. The assumption that will be used in this study is the VRS assumption to determine DMU efficiency.

b.   Variable Return To Scale (VRS)

This model was developed by Banker, Charnes, and Cooper (BCC model) in 1984 and is a development of the CCR model. This model assumes that the company does not or has not operated at an optimal scale. This model assumes that the ratio between the addition of inputs and outputs is different (variable return to scale). Increasing the input by x times will not cause the output to increase by x times. It can be smaller or larger than x times. The variable return to scale (VRS) formula can be written in a mathematical program.

3.2   RQ2. What are the weaknesses of the research methods used in institutional-based research on the competitiveness of agricultural commodities?

This quantitative and qualitative research type is descriptive with the SWOT analysis method, Conjoint Pairwise-Comparison, interactive analysis model, scaling index, Panzer-Rosse index. It has several weaknesses, including: SWOT analysis tends to be subjective. This can be seen from the determination of internal and external factors that are only estimated so that it is possible to produce an inaccurate strategy. In evaluations, it looks at negative factors (weaknesses and threats). At the same time, formulating strategies refers to positive factors, thus making formulating strategies in the WT column (weaknesses and threats) difficult. The number of attributes used in the Conjoint Pairwise-Comparison analysis could be much higher. Profile ratings are unrealistic and not directly related to behavioral theory. Choice-based conjoint analysis cannot provide individual-level utility, and researchers develop aggregate models to represent market preferences. This makes it unsuitable for market segmentation studies.

4   Conclusion

Some conclusions are based on the results of the research that has been done. Assessment Quality (AQ) produced 12 articles related to research methods that are often used in institutional-based agricultural commodity competitiveness research from 2015 to 2020. Research methods that are often or most widely used in institutional-based agricultural commodity competitiveness research a type of quantitative research (6 articles) and a qualitative type (5 articles) with a descriptive nature and a SWOT analysis approach, conjoint pairwise-comparison, interactive model of analysis, scaling index, panzer-rosse index. While the type of research is the mixed method with data envelopment analysis (DEA) approach, the assumption of variable return to scale (VRS) is only used in 1 article.

Weaknesses in this quantitative and qualitative research are descriptive with the SWOT Analysis method, Conjoint Pairwise-Comparison, interactive analysis model, scaling

index, and Panzar-Rosse index, including SWOT analysis tends to be subjective. This can be seen from the determination of factors internal and external estimates that are only estimated so that it is possible to produce an inaccurate strategy. The number of attributes used in the Conjoint Pairwise-Comparison analysis could be much higher. The choice-based conjoint analysis cannot provide individual-level utility, and researchers develop an aggregate model to represent market preferences.

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